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(71) Applicant (*for all designated States except US*): IMPERIAL COLLEGE INNOVATIONS LIMITED [GB/GB]; Electrical and Electronic Engineering Building, Imperial College London, Exhibition Road, London SW7 2AZ (GB).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): KROLL, John, Simon [GB/GB]; Imperial College Innovations Limited, Electrical and Electronic Engineering Building, Imperial College London, Exhibition Road, London SW7 2AZ (GB). LANGFORD, Paul, Richard [GB/GB]; Imperial College Innovations Limited, Electrical and Electronic Engineering Building, Imperial College London, Exhibition Road, London SW7 2AZ (GB). BOSSE, Janine [CA/CA]; Imperial College Innovations Limited, Electrical and Electronic Engineering Building, Imperial College London, Exhibition Road, London SW7 2AZ (GB). BEDDEK, Amanda [GB/GB]; Imperial College Innovations Limited, Electrical and Electronic Engineering Building, Imperial College London, Exhibition Road, London SW7 2AZ (GB).

(GB). RYCROFT, Andrew [GB/GB]; Imperial College Innovations Limited, Electrical and Electronic Engineering Building, Imperial College London, Exhibition Road, London SW7 2AZ (GB). SHEEHAN, Brian [IE/IE]; Imperial College Innovations Limited, Electrical and Electronic Engineering Building, Imperial College London, Exhibition Road, London SW7 2AZ (GB).

(74) Agents: MACLEAN, Martin, Robert et al.; Mathys & Squire, 100 Gray's Inn Road, London WC1X 8AL (GB).

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(54) Title: BACTERIAL VIRULENCE GENES

(57) **Abstract:** An attenuated *Actinobacillus pleuropneumoniae* bacterium has a mutation in a gene required for bacterial virulence. Vaccines based upon the bacterium are provided, as are isolated virulence genes and polypeptides and uses thereof.